State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

John J. Hayes
Project Manager
USNRC
Mail Stop T8F5
Washington, DC 20555

February 5, 2008

Re: Results of Ground Water and Potable Well Sampling Event
Shieldalloy Metallurgical Corporation
Newfield Borough, Gloucester County, New Jersey

Dear Mr. Hayes:

I am writing to advise you of the analytical results for the samples collected by the New Jersey Department of Environmental Protection (the Department) during the split sampling event conducted on July 24 and 25, 2007, in Newfield Borough Gloucester County. This event included ground water sampling of fourteen (14) monitoring wells located at the Shieldalloy Metallurgical Corporation (SMC) site, as well as potable well sampling at Newfield Borough Well Nos. 3 and 5. The samples were split between USNRC, SMC and the Department.

The Department sent its samples to the New Jersey Department of Health and Senior Service (DHSS) Laboratory for analysis for the following radiological parameters: Gross Alpha & Beta Activities, Isotopic Uranium, Potassium-40 and Radium-226 & Radium-228.

The results of the Department's samples show that the two Newfield Borough wells and all of the SMC monitoring wells analyzed, with the exception of SC20D, were in compliance with the Federal and State Safe Drinking Water Act Maximum Contaminant Levels (MCLs) for the radiological parameters. The results are presented in the enclosed tables. Table 1 compares the results directly to the MCLs. Tables 2 and 3 provide the supporting data and information used to prepare Table 1.

These results were previously shared with Mark C. Roberts of the USNRC and presented in his Inspection Report No. 04007102/2006001 dated January 11, 2008. The results of our samples correspond well with those of the USNRC.

The results of monitoring well SC20D are of concern to the Department. We recommend that the USNRC conduct additional investigation to determine why this on-site monitoring well exhibits elevated concentrations of Gross Alpha Activity and Radium-226 & Radium-228. The additional investigation should be included in the site characterization which is an integral part of the Decommissioning Plan.

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If you have any questions regarding this letter, please contact me at (609) 633-1494.

Sincerely,

Donna L. Gaffigan, Case Manager
Bureau of Case Management

Enclosures

C: Patricia Gardner, NJDEP/BER
Trevor Anderson, USEPA
Mark C. Roberts, USNRC
David R. Smith, SMC
Stephen Tappert, TRC

Table 1

Shieldalloy
Summary of Results of NJDEP Split Sampling w/NRC*

	Radionuclide Concentrations (pCi/L)									
Field Sample ID#	Gross Alpha activity	Gross Alpha MCL (1)	Gross Beta activity	Gross Beta MCL (2)	Adjusted Gross Beta (3)	Combined Ra-226 and Ra-228	Combined MCL (4)	Total U (µg/L) activity	Total U (µg/L) MCL (5)	
SC25S	0.76	15	1.4	50		-0.94	5	0.221	30	
SC14S	2.35	"	5.86	"		-0.88	"	0.0097	"	
SC12S	3.72	"	56.7	"	-14.3	2.55	"	-0.206	"	
"	3.38(dup)	"	54.31(dup)	"	-24.69 (dup)	0.25 (dup)	"	0.379 (dup)	"	
W2R	1.4	"	7.5	"		1.04	"	-0.0563	"	
SC22S	1.17	"	13.71	"		-1.4	"	0.0033	"	
"	1.69(dup)	"	11.01(dup)	"		-1.45 (dup)	"	-0.0220(dup)	"	
IWC2	3.71	"	18.74	"		-0.3	"	-0.42	"	
IWC3	7.18	"	8.98	"		1.67	"	-0.0362	"	
SC20D	17.43	"	17.85	"		8.28	"	0.112	"	
"		"		"			"	0.172 (dup)	"	
A	1.53	"	7.20	"		0.57	"	0.0329	"	
"		"		"			"	-0.0170 (dup)	"	
SC11SR	0.58	"	3.09	"		-0.58	"	-0.200	"	
DUP (SC11SR)	0.59	"	3.18	"		0.79	"	-0.0497	"	
SC12D	6.78	"	4.27	"		2.61	"	0.219	"	
IWC1	9.1	"	51.4	"	-33.6	0.02	"	0.118	"	
SC20S	1.94	"	13.33	"		0.27	"	-0.0430	"	
SC26D	0.75	"	7.91	"		0.89	"	0.230	"	
"	0.49 (dup)	"	8.53 (dup)	"			"		"	
Newfield Well #5	12.01	"	11.09	"		4.18	"	0.0247	"	
Newfield Well #3	5.24	"	7.12	"		1.88	"	0.0263	"	
"		"		"			"	0.0727 (dup)	"	

(1) Gross Alpha particle radioactivity (including radium 226 but excluding radon and uranium) MCL is 15 pCi/L.

(2) Beta/photon emitters MCL is 4 mrem/year; Gross Beta (minus contibution of naturally ocurring K-40) of 50 pCi/L is used as a screening value to evaluate compliance with the MCL.

(3) Adjusted Gross Beta is compared to screening value after subtracting contribution from K-40.

(4) Combined Radium 226/228 MCL is 5 pCi/L.

(5) Uranium MCL is 30 µg/L; results are originally recorded in pCi/L, then converted to µg/L.

*Samples collected July 24-25, 2007

Updated on 2/4/2008

Table 2

Shieldalloy
Results of NJDEP Split Sampling w/NRC*

					Radionuclide Concentrations (pCi/L)							
	Gross Alpha		Gross Beta		Radium-226		Radium-228		Total U (ug/L)		K-40	
Field Sample ID#	activity (1)	error	activity	error	activity	error	activity	error	activity	error	activity	error
SC25S	0.76	0.24	1.4	0.28	0.19	0.3	-1.13	0.67	0.221	0.025	<9.6	
SC14S	2.35	0.34	5.86	0.38	-0.38	0.3	-0.5	0.71	0.0097	0.0013	<41	
SC12S	3.72(D)	0.64	56.7(D)	1	0.78(D)	0.4	1.77(D)	0.97	-0.206 (D)	0.032	71(D)	19
"					1.37(S)	0.33	-0.1 (S)	0.46			51.4(S)	3.4
"	3.38(D dup)	0.6	54.31(D dup)	0.98	0.16(D dup)	0.23	0.09 (D dup)	0.53	0.379 (D dup)	0.044	79 (D dup)	19
"					0.41(S dup)	0.19	0.58(S dup)	0.38			14.0 (S dup)	4.8
W2R	1.4 (D)	0.33	7.5(D)	0.42	0.19(D)	0.33	-0.54(D)	0.71	-0.0563(D)	0.0096	<42(D)	
"					-0.03(S)	0.16	-0.52(S)	0.40			<8.8(S)	
SC22S	1.17(D)	0.36	13.71(D)	0.55	0.01(D)	0.31	-1.41(D)	0.68	0.0033(D)	0.0003	<11(D)	
"	1.69(D dup)	0.40	11.01(D dup)	0.50	-0.24(D dup)	0.33	-1.21(D dup)	0.80	-0.0220(D dup)	0.0023		
"					-0.23(S)	0.21	-0.41(S)	0.55			<14(S)	
IWC2	3.71	0.92	18.74	0.89	0.28	0.32	-0.58	0.71	-0.42	0.11	<42	
IWC3	8.34(D 1st)	0.63	8.98(D)	0.45	0.58(D)	0.34	1.09(D)	0.53	-0.0362(D)	0.0077	<15(D)	
"	7.18(D 2nd)	0.59										
"					0.02(S)	0.15	-0.40(S)	0.40			<6.9(S)	
SC20D	23.52 (1st)	0.97	17.85	0.58	2.88	0.47	5.4	1.0	0.112	0.015	<11	
"	17.43 (2nd)	0.84							0.172 (dup)	0.034		
A	1.53 (D)	0.37	7.20	0.50	0.50 (D)	0.18	0.07 (D)	0.23	0.0329 (D)	0.0055	<43 (D)	
"					-0.20 (S)	0.13	-0.72 (S)	0.34	-0.0170 (D dup)	0.0033	6.1 (S)	
SC11SR	0.58 (D)	0.18	3.09 (D)	0.31	0.39 (D)	0.31	-0.97 (D)	0.69	-0.200 (D)	0.042	<56 (D)	
"					-0.27 (S)	0.20	-0.48 (S)	0.52			<13 (S)	
DUP (SC11SR)	0.59 (D)	0.20	3.18	0.34	1.05 (D)	0.25	-0.26 (D)	0.39	-0.0497 (D)	0.0081	<57 (D)	
"					-0.018 (S)	0.092	-0.38 (S)	0.23			<3.6 (S)	
SC12D	6.01 (1st)	0.44	4.27	0.33	1.81 (D)	0.53	0.80 (D)	0.79	0.219 (D)	0.025	<11 (D)	
"	6.78 (2nd)	0.50										
"					2.57 (D dup)	0.46						
"					0.00 (S)	0.15	-0.11 (S)	0.36			<7.7 (S)	
IWC1	9.3 (1st)	1.3	51.4	1.4	0.32 (D)	0.31	-0.30 (D)	0.61	0.118 (D)	0.017	85 (D)	16
"	9.1 (2nd)	1.3			2.73 (S)	0.35	0.05(S)	0.56			<15 (S)	
SC20S	1.94 (D)	0.51	13.33	0.75	-0.21 (D)	0.32	0.48 (D)	0.75	-0.0430 (D)	0.0093	<45 (D)	
"					-0.06 (S)	0.22	-0.68 (S)	0.54			<12 (S)	
SC26D	0.75 (D)	0.35	7.91 (D)	0.39	0.15 (D)	0.32	0.74 (D)	0.72	0.230 (D)	0.028	11.8 (D)	5.8
"	0.49 (D dup)	0.33	8.53 (D dup)	0.40	-0.24 (S)	0.17	-1.07 (S)	0.42			<5.9 (S)	
Newfield Well #5	12.01 (1st)	0.64	11.09	0.42	1.75	0.24	2.43	0.31	0.0247	0.0041	<11	
Newfield Well #3	5.24	0.40	7.12	0.35	0.90	0.24	0.98	0.48	0.0263	0.0044	<13	
"									0.0727 (dup)	0.0111		
(1) For gross alpha analyses, a 2nd count is initiated when the initial count (analysis) is greater than 5 pCi/L, as per the analytical protocol												

*Samples collected July 24-25, 2007

Updated on 2/4/2008

List of Acronyms and Definitions Used in Tables 1 and 2

1st	First count. For gross alpha analysis, the initial count (analysis) is designated as 1st count to differentiate it from the 2nd count, when the first count is greater than 5 pCi/L.
2nd	Second count. For gross alpha analysis, a second count is initiated when the initial count (analysis) is greater than 5 pCi/L, as per the analytical protocol.
Adjusted Gross Beta	The amount of Gross Beta Activity after subtracting the contribution from K-40.
D	Dissolved. The amount of radiation that is dissolved in a water sample.
DUP	Field duplicate. A second water sample collected from a well that is sent to the laboratory and analyzed. Field duplicates allow for the evaluation of the sample collection and laboratory performance by comparing analytical results of two samples from the same well.
dup	Laboratory duplicate. A second aliquot from one sample that is also analyzed. Laboratory duplicates allow for the evaluation of the laboratory performance by comparing analytical results of two aliquots from one sample.
Gross Alpha Activity	A measure of the radioactivity produced from all alpha emitting isotopes.
Gross Beta Activity	A measure of the radioactivity produced from all beta emitting isotopes.
K-40	Potassium-40. A naturally occurring isotope of potassium.
MCL	Maximum Contaminant Levels as defined in the federal and state SDWA.
mrem	millirem. A measure of dose, which takes into account the amount of energy absorbed by the body from the radionuclide and its effectiveness in causing biological damage.
pCi/L	picocuries per liter. A measure of the amount of radioactivity per liter of water.
Ra-226	Radium-226. An isotope of radium.
Ra-228	Radium-228. An isotope of radium.

S	Suspended. The amount of radiation that is suspended in a water sample. It is determined by filtering the sample and measuring the quantity of radiation detected on the filter paper.
SDWA	Safe Drinking Water Act. The federal and state laws that regulate the quality of drinking water.
U	Uranium.
µg/l	micrograms per liter. A measure of concentration equivalent to parts per million.

Note: Because radioactive decay is a random process, any measurement based on observing the radiation emitted in nuclear decay is subject to some degree of statistical fluctuation. Because of this, results of analyses for radionuclides are reported as possible range of activity, not a single result. For example, a typical result for a gross alpha analysis might be reported as 1.2 +/- 0.2 pCi/L. This means that the laboratory is confident that the *true* result lies between 1.0 and 1.4 pCi/L. As such, for samples with low amounts of radioactivity in them, it is not unusual to see a negative result, such as -0.25 +/- 0.1 pCi/l. This is normal for these types of analyses and should not be considered to be in error.